

## 다발성 요추부 척추분리증 및 전방전위증

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= Abstract =

### Multiple Spondylolytic Spondylolisthesis

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**M**ultiple spondylolytic spondylolisthesis is very uncommon, and surgical reports are also scarce. This study describes the clinical characteristics, radiologic findings and surgical methods in 18 cases of multiple spondylolytic spondylolisthesis encountered by the authors between January, 1993 and December, 1996.

Two hundred and thirty spondylolytic spondylolisthesis patients underwent surgery at this hospital during the same period, and in 18 of these, the spondylolysis was multiple, an incidence of 7.8%.

There were 16 cases of two level spondylolyses, 15 of which were at L4 + L5, and one case at the L3 + L4 level, as well as two cases of three level spondylolyses, one at L2 + L3 + L4 and the other at the L3 + L4 + L5 level. All 18 cases showed spondylolisthesis at L4/5 and two showed two - level spondylolisthesis at L4/5 and L5/S1. A decompressive laminectomy(Gill operation) was performed in all cases and in addition, two level 360 ° fixation with pedicle screws and PLIF with cages was applied in 16 cases, and two level PLIF with cages in the other two. All showed good post-operative results.

In conclusion, the condition was more common in females and bilateral L4 and L5 pars interarticularis defect and L4/5 spondylolisthesis were more common. Decompressive laminectomy(Gill operation) and two level 360 ° fixation with pedicle screws and PLIF with cages was found to be an effective operative choice.

**KEY WORDS :** Spondylolysis · Multiple spondylolyses · Spondylolisthesis · Pedicle screw fixation · PLIF with cages · 360 ° fixation.

서 론

(multiple spondylolyses)

(spondylolysis) (spondy - 1939 Friberg<sup>4)</sup>가

lolisthesis)

4 6%<sup>5)</sup>

가

50%<sup>10)15)21)</sup>

가

1)4) 5

4 8)20)

1993 1996 12

18

## 대상 및 방법

1993 1996 12 230 , 212 , 18 7.8% (Table 3). 18 (Table 1). 46.9 36 62 2 , 16 1 : 8 가 , 5.7 1 20 26 (Table 1). , NIC 15 (83.3%) (Table 2).

## 결 과

### 1. 방사선학적 소견

18 2 16 , 3 2 4, 5 2 가 15 가 , 18 83.3% 3 2, 3, 4 1 , 3, 4, 5 1 (Table 3, Fig. 1, 2, 3, 4). 18

**Table 1.** Demographic characteristics of patients

| Characteristic                |                     |
|-------------------------------|---------------------|
| Age(yrs)                      | 36 - 62             |
| Mean age(yrs)                 | 46.9                |
| Sex(male : female)            | 2 : 16(1 : 8)       |
| Duration of symptom(yrs)      | 1 - 20              |
| Mean duration of symptom(yrs) | 5.7                 |
| Trauma history                | Negative in 14/18   |
| Occupation                    | House wife in 15/18 |

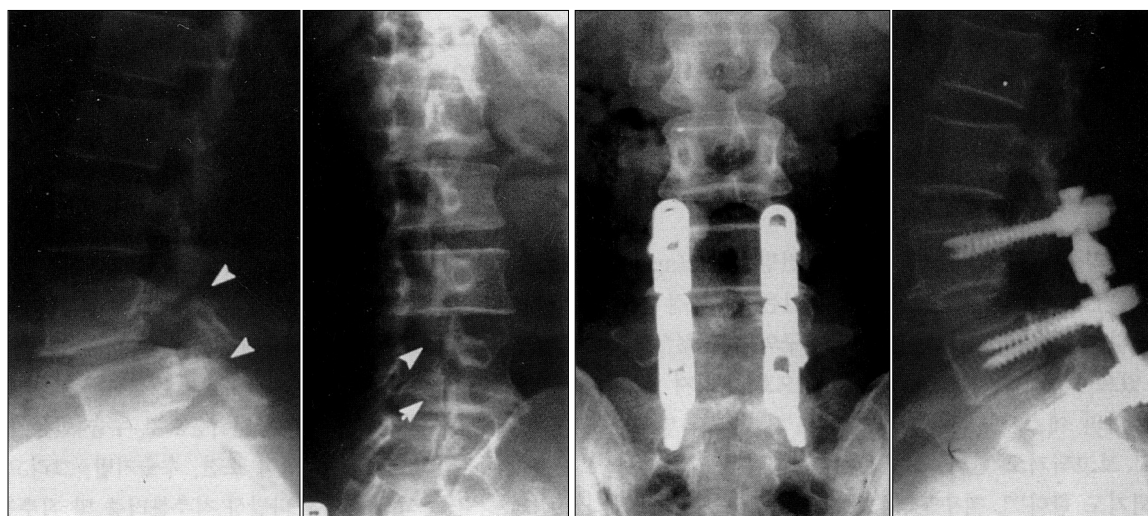
**Table 2.** Symptoms and signs

| Symptoms & signs | No. of cases(%) |
|------------------|-----------------|
| Low back pain    | 18(100)         |
| Radiating pain   | 18(100)         |
| Unilateral       | 11              |
| Bilateral        | 7               |
| NIC*             | 15(83.3)        |
| Neurologic sign  | 0( 0)           |

\*NIC : Neurogenic intermittent claudication

**Table 3.** Level of spondylolysis(n=230)

| Level        | No. of cases(%) |
|--------------|-----------------|
| One level    | 212(92.2)       |
| L3           | 6               |
| L4           | 115             |
| L5           | 91              |
| Two level    | 16( 7.0)        |
| L3 + L4      | 1               |
| L4 + L5      | 14              |
| Three level  | 2( 0.8)         |
| L2 + L3 + L4 | 1               |
| L3 + L4 + L5 | 1               |
| Total        | 230(100)        |



**Fig. 1.** Radiograph of L4 + L5 double spondylolyses and two level 360° fixation with solock system.

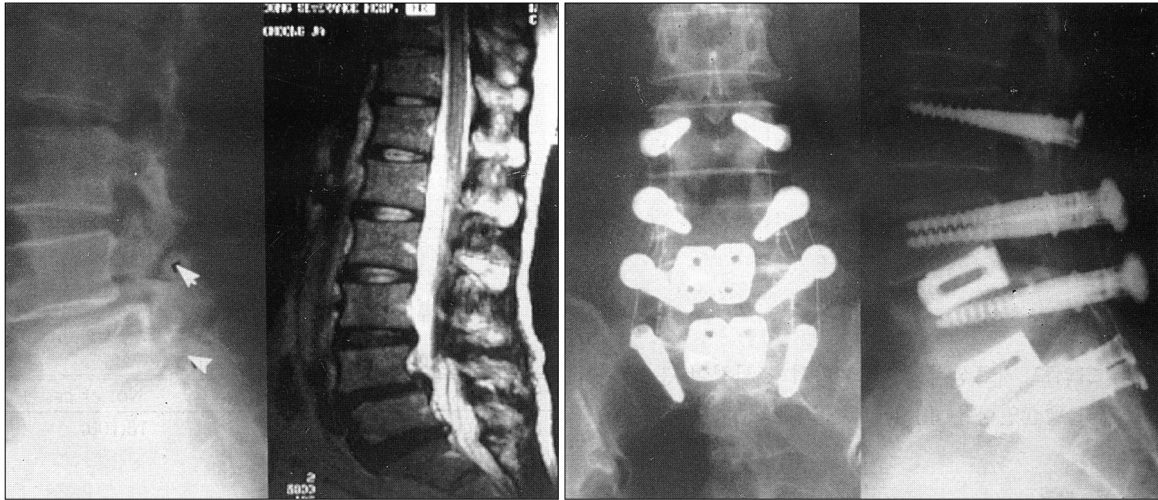


Fig. 2. Radiograph of L4 + L5 double spondylolyses and two level 360° fixation with Graf soft fixation system.

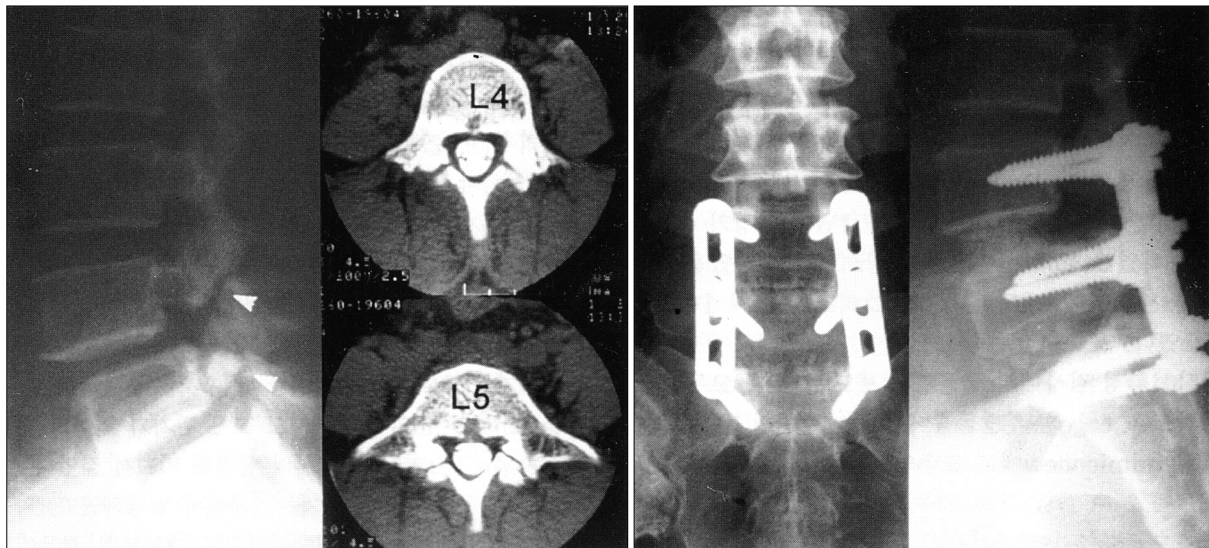


Fig. 3. Radiograph of L4 + L5 double spondylolyses and two level 360° fixation with VSP system.

|          |         |     |
|----------|---------|-----|
| 16       | L4/5    | ,   |
| grade II | grade I | , 2 |
| L4/5     | L5/S1   | .   |

## 2. 수술 방법에 따른 분류

|                  |       |
|------------------|-------|
| Gill's operation | . 16  |
|                  | cages |
|                  | 360°  |
| , 2              | 2     |
|                  | cages |

Table 4. Methods of operation (n=18)

| Method of operation               | No. of cases |
|-----------------------------------|--------------|
| Two level 360° fixation           | 16           |
| Isolock system                    | 13           |
| Graf soft fixation system         | 2            |
| VSP system                        | 1            |
| Two level PLIF* with cages(TFC**) | 2            |

\*PLIF : Posterior Lumbar Interbody Fusion

\*\*TFC : Threaded fusion cage

(Table 4). 360°  
16 13 Isolock system(Fig.  
1), 2 GRAF soft fixation(Fig. 2), 1 VSP  
system(Fig. 3) . Cages

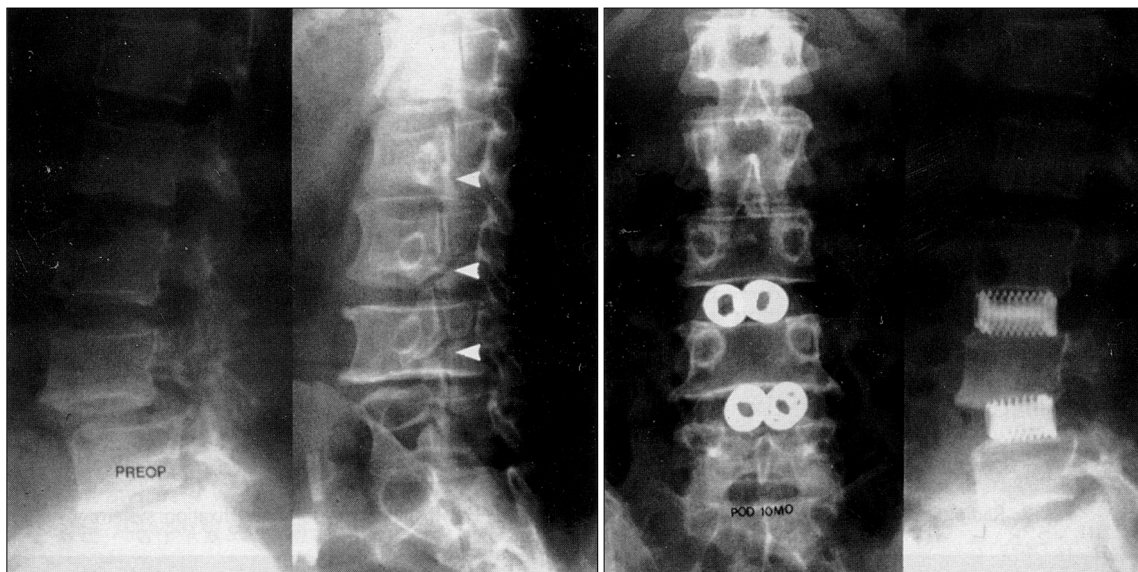


Fig. 4. Radiograph of L2 + L3 + L4 Three level spondylolyses and two level posterior lumbar interbody fusion with TFC.

TFC(Threaded Fusion Ca - 3 230  
ge) (Fig. 4). , 18  
7.8% .  
3. 치료결과  
1, 3, 6, 12, 24  
Prolo's functional and economic scale  
. 1 가 가  
가 15 6  
excellant, 8 good, 1 fair grade  
. 1980 Ravichan -  
dran<sup>18)</sup> 6 , 4 . Ravic -  
. cage cage halo , handran 가  
dynamic view ,  
고 찰  
3 2 ,  
가 . 가 46.9  
1939 Fr -  
iberg<sup>4)</sup>가 , Stewart<sup>21)</sup> 36 62 .  
786 skeletal survey 44  
, Kettlekamp <sup>10)</sup> 가  
가 153 2 가  
. 1971 Mayo clinic<sup>23)</sup> 가  
173 .  
5.7 1 20 .  
0.2<sup>3)15)</sup> 5.6%<sup>21)</sup> .  
(Neurogenic intermittent

claudication) 100%, 83.3% , ,  
 가 , .  
 Stewart<sup>21)</sup> 786 skeletal su - cages  
 rvey 163 (20.7%) 360 °  
 , 5 가 123 가 , 4  
 35 . 44 (5.6%)  
 , 4, 5 2 27 가 ,  
 , 3, 4, 5 3 7 .  
 가  
 4, 5 2 가 .  
 18 15 83.3% 가  
 3, 4 2 1 , granulation  
 3 2 . 14)17)18)21)  
 2 cages  
 14)18)  
 L5/S1 가 , cage  
 , L4/5 , 가  
 가  
 L4/5 L4/5 Cages ,  
 L4/5 L5/S1 2 distraction force가 가 di -  
 2 . straction force ,  
 4 가 115 , 5 가 91 cages  
 1)5)8) 가 .  
 가 Is -  
 , olock system . cages  
 , 360 °  
 가 anterior, middle, posterior column (st -  
 ability)  
 dec - 가 , posterolateral fus -  
 ompressive laminectomy<sup>6)7)</sup> direc repair<sup>2)11)</sup>, po - ion ,  
 sterolateral fusion<sup>22)</sup>, circumferential fusion<sup>12)16)</sup> 가 ,  
 cages  
 (instability) , compression  
 posterolateral force anterior column  
 fusion 가 (fatigue failure)  
 pseudoarthrosis, instrument failure 가  
 , anterior column late  
 loss of correction 12)16)22) .  
 circumferential fusion  
 Circumferential fusion 1)  
 posterolateral fusion , 2 7.8%  
 12)16) 2) L4 + L5 2  
 2 , 83.3% , 3

## 결 론

2 (11%) .

3) L4/5 (100%)

, 2 2 (11%) .

4) , ca -

ges

360 ° .

- : 1997 6 18
- : 1997 8 21

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